

Gatlinburg Post-fire Planting Brochure

Recovery and Restoration



What Can Be Learned?

The Good

Disturbance is an important element in natural landscapes. From the toppling of a single tree in the forest to widespread floods and fires, disturbance in nature is not merely an avenue of destruction, it is also an avenue for renewal. In a forest, this renewal comes from openings in the canopy that allow light and newly released nutrients to spark germination of new plants and spur growth of young saplings, creating a patchwork of older and younger forests, increasing plant diversity, and supporting a wider array of wildlife.

The Bad and the Ugly

Disturbance does have a down side. Forest openings with increased light, nutrient, and water availability are equally attractive to non-native invasive plants, presenting opportunities for them to gain a foothold. These invasive species possess traits that give them distinct advantages over native species, such as rapid growth, early maturity for flowering and fruiting, prolific seed production and germination, and alteration of soil chemistry. These characteristics allow non-native invasive plants to quickly outcompete and displace the native species. In addition, the wide diversity of native species normally found there is replaced by only one or two aggressive species that offer little or no support for wildlife. The rapid growth and spread of non-native invasive plants only serves to increase the potential fuel load for future fires along forest edges, roadways, and lot boundaries.

What Can Be Done?

Great Smoky Mountains National Park and Surrounding Natural Areas

The fire that ravaged Gatlinburg left many areas bare of vegetation. Monitoring burned forest land adjacent to the city for invasive species will be important to minimizing the spread of undesirable plants, as some harmful species can also invade intact forests and present a threat to unburned areas of Sevier County and Great Smoky Mountains National Park. Allowing native plants time and space to naturally re-establish in burned areas gives the forest understory a better chance to defend against fast-growing, fast-spreading non-native species and the fuel-loading they represent.

Landscaping Homes and Businesses

The choice of plant material for residential and commercial landscapes within the city is equally important. Selecting native plants or non-invasive non-native ornamentals ensures that sources for the spread of invasive species are minimized. It will be necessary to monitor city and private property for invasion of aggressive non-native species as well and remove them promptly before they can spread or set seeds. Some may show up right away; others may take a year or two to become evident.

How Can This Brochure Help?

This brochure highlights a few of the non-native invasive species likely to be problematic in the post-fire landscape, offering descriptions and photos to aid identification. Importantly, suitable native plants are recommended in their place, featuring brief descriptions and photos. Both represent a partial listing. For access to a complete list of plant species invasive in Tennessee and informational brochures on native plants for landscaping, please visit the Tennessee Invasive Plant Council's website -- www.tneppc.org, "Landscaping" tab.

Your local nursery or garden center can provide many of these and other native plants, but be aware that not all species sold commercially are native. There are area nurseries that specialize in or carry a large selection of native species. Here are three excellent area resources for landscapers and home gardeners.

Overhill Gardens, Vonore: <http://www.overhillgardens.com/>

Sunlight Gardens, Andersonville: <https://sunlightgardens.com/>

Tennessee Naturescapes, Clinton: <http://www.tennesseesnaturescapes.com/>

When replanting any landscape, consider placement carefully to keep potential fuels away from structures. If erosion control is needed, stabilize the slope with non-plastic fabric. Plastic fabrics last for years, well beyond their usefulness, and trap native wildlife such as birds, amphibians, reptiles, and small mammals. Rolls of hemp netting are more flexible and biodegradable and can be purchased from reputable nurseries and online.

Non-native Invasive Plants

For more images of these and other invasive plants, visit
Center for Invasive Species and Ecosystem Health, <http://www.invasive.org>

Native Plant Alternatives

For more images of these and other native plants, visit University of Tennessee Herbarium,
<http://tenn.bio.utk.edu/vascular/vascular.shtml>

Herbaceous Plants



Coltsfoot

Coltsfoot (*Tussilago farfara*) — Coltsfoot is a perennial with a multi-branched creeping stem below ground. From early spring through June, the flower stalks emerge before the leaves, each bearing a solitary dandelion-like yellow flower open on sunny days. Leaves appear after the flowers mature and are heart-shaped and slightly toothed with a whitish underside. Intolerant of shade, it is not commonly found in wooded areas, though it has been documented invading forests following fire. Seeds blow in the wind, and underground stems easily fragment, facilitating spread.

Yellow or Small's Ragwort (*Packera anonyma*) — spring herb with bright clusters of yellow daisy-like flowers



Yellow or Small's Ragwort

Whorled Tickseed (*Coreopsis major*)

Grass-leaved Golden-aster (*Pityopsis graminifolia*)

Maryland Golden-aster (*Chrysopsis mariana*) — three summer and fall flowering native options with yellow daisy flowers



Garlic Mustard

Garlic Mustard (*Alliaria petiolata*) — Garlic mustard is a biennial, living two years and producing white flowers/fruit in spring of the second year. The first year garlic mustard foliage creates a tight cluster (rosette) of round to kidney-shaped leaves to 4 inches high. Leaves on flowering stems are alternate and are larger near the base, coarsely toothed, and triangular to heart shaped. The plant emits the odor of garlic when crushed. It poses a significant threat to lowland natural areas as well as gardens and crop fields. Disturbed forest, floodplains, and riparian communities are most susceptible to garlic mustard invasion, which can dominate the herb strata within ten years. It deters growth of other plants, invades pristine forest understory, forms dense stands, and reduces native species diversity. It may also impact plant associations with soil fungi and alter tree composition. It does not support native butterflies that feed on plants in the mustard family.

Toothwort, Crinkleroot (*Dentaria diphylla*) — April perennial herb, white to pinkish-purple flowers, butterfly larval food

Purple Phacelia (*Phacelia bipinnatifida*) — April biennial, purple flowers

Creeping Phlox (*Phlox stolonifera*) — April perennial, purple flowers



Toothwort, Crinkleroot

Vines



English Ivy

English Ivy (*Hedera helix*) — An evergreen woody vine that can climb to 90 feet by clinging aerial roots and trail to form a dense ground cover. Leaves alternate on the stem, and shapes vary according to age, with typical juvenile plants having three to five pointed lobes and mature plants producing leaves that are broadly lance shaped and unlobed. Leaves are thick and waxy, smooth and hairless, dark green with whitish veins radiating from the leaf stem and pale green beneath. Shade tolerant vines climb and cover trees to increase chance of windthrow and carry diseases harmful to several native species such as oaks and maples. Birds spread the toxic fruit.

Crossvine (*Bignonia capreolata*) — climbing woody vine, semi-evergreen, red/yellow flowers midspring, hummingbirds

Climbing Hydrangea (*Decumaria barbara*) — climbing woody vine, shiny dark green leaves, deciduous, white fragrant flower clusters late spring



Climbing Hydrangea



Oriental Bittersweet

Oriental Bittersweet (*Celastrus orbiculatus*) — A deciduous woody twining vine, sometimes a spreading trailing shrub, with a maximum height of 60 feet. Stems and branches are round, smooth, olive to brown with raised whitish corky dots (pores). Each yellow and red fruit cluster leaves a semicircular scars on the branch with a tiny corky shelf projection. Leaves have long tapering tips when young, becoming larger and round tipped when mature with blunt teeth, turning bright yellow in fall. Shade tolerant, it can form extensive infestations in forest openings, margins, and roadsides.



Trumpet or Coral Honeysuckle

American Bittersweet (*Celastrus scandens*) — twining woody vine, leaves have a pronounced tip, colorful fruit in large clusters at branch tips, yellow fall foliage

Trumpet or Coral Honeysuckle (*Lonicera sempervirens*) — small twining woody vine, semi-evergreen, showy clusters of red tubular flowers midspring, hummingbirds



Wintercreeper

Wintercreeper (*Euonymus hederaceus*) — An evergreen woody vine climbing 40 to 70 feet, clinging by aerial roots, rooting at leaf joints, or standing as a shrub to 3 feet. Leaves are opposite, broadly oval, moderately thick, with finely crenate margins somewhat turned under. Leaf blades are smooth, glossy, hairless, dark green with whitish veins (or variegated green white above and light green beneath). Forms a dense ground cover and climbs trees increasing the chance of windthrow. Birds spread reddish fruit.

Partridgeberry (*Mitchella repens*) — shade tolerant, evergreen creeping vine rooting on the ground, pairs of white flowers in June, red fruit in fall



Partridgeberry

Teaberry, Wintergreen (*Gaultheria procumbens*) — evergreen ground cover, shiny dark green foliage, white flowers, large red fruit



Wisteria

Wisteria (*Wisteria sinensis* and *W. floribunda*) — This voracious twining vine climbs high into tree canopies forming extensive infestations. Leaves are alternate, odd-pinnately compound, 4 to 16 inches long with 7 to 13 leaflets for Chinese wisteria and 13 to 19 leaflets for Japanese. Leaflets are oval to elliptic with tapering pointed tips and smooth wavy edges. Young leaflets are quite hairy, but become mostly to completely smooth at maturity.

American Wisteria (*Wisteria frutescens*) — deciduous woody vine, compound leaves, plump clusters of fragrant purple flowers, much easier to manage, flowers at young age



American Wisteria

Passion-flower, Maypop (*Passiflora incarnata*) — deciduous trailing vine, three-lobed leaves, showy unique purple flowers in summer, egg-shaped edible fruit

Shrubs



Burning Bush

Burning Bush (*Euonymus alatus*)— Burning Bush is a deciduous, bushy shrub. Four corky wings or ridges appear along young lime-green squarish twigs and become wider with age. Numerous opposite branches have bases encircled by corky rings. Larger branches and bark becomes light gray. Opposite leaves are wider near the tip, thin, and 1 to 2 inches long. Tips taper to an acute point, and the margins are finely crenate. Both leaf surfaces are smooth and hairless colored dark green with whitish midvein above and light green beneath. Foliage turns bright crimson to purplish red in fall. Fruit is dispersed by animals. Shade tolerant, burning bush invades the forest understory.

Hearts-a-bustin' (*Euonymus americanus*) — shrub (family relative) with green square twigs, showy warty red fruit, fall color



Hearts-a-bustin'

Highbush Blueberry (*Vaccinium corymbosum*) — shrub with showy flowers, edible fruit, fall color; leaves alternate

Winged or Shining Sumac (*Rhus copallinum* var. *copallinum*) — shrub to small tree with compound, pinnate leaves, showy fruit, fall color



Bush Honeysuckle

Bush Honeysuckle (*Lonicera maackii*) — Honeysuckles are opposite branched, and bark is tan with a braided-strand appearance, sometimes flaking. Leaves are opposite, elliptic or egg-shaped and leaf margins are smooth. Amur honeysuckle's leaves are usually twice as long as wide and taper to a long point. Foliage emerges early in spring and is often persistent into winter. New twigs have small hairs when young but lose this characteristic with age. It forms dense populations that shade out all competition and may deter germination and growth of nearby plants. Bush honeysuckle fruits lack rich lipids found in native plant fruits (e.g. spicebush, dogwood) and cannot support migrating birds.



Spicebush

Spicebush (*Lindera benzoin*) — aromatic shrub, small yellow flowers early spring, shiny red fruit on female plants in fall, prefers shade and moist conditions

Black Chokeberry (*Aronia melanocarpa*) — fragrant white spring flowers, glossy foliage, black fruit, fall color

Pin or Fire Cherry (*Prunus pensylvanica*) — establishes after forest fire, reddish orange twigs and bark, showy white flower clusters and red fruits



Privet

Winterberry (*Ilex verticillata*) — deciduous holly, greenish-white flowers in June, red fruits on female plants

Privet (*Ligustrum sinense* and *L. vulgare*) — Slender gray-green twigs form long leafy branches at right angles. Young branches are minutely hairy. Semi-evergreen to evergreen, opposite leaves are elliptic to egg-shaped with a rounded tip often minutely indented and 4-5 pairs of indistinct veins. Shade tolerant Chinese and European privet are aggressive spreaders forming dense thickets, particularly along stream corridors and bottomlands. Birds disperse fruits, which are mildly toxic to humans.



Maple-leaved Viburnum

Maple-leaved Viburnum (*Viburnum acerifolium*) — small shrub, maple-shaped leaves, flat clusters of white flowers in May, black fruit, fall color

Mountain Laurel (*Kalmia latifolia*) — tall evergreen shrub, dark green leathery leaves, white flower clusters in May

[Caution: very flammable, site 30' away from structures]

Trees



Mimosa

Mimosa (*Albizia julibrissin*) — Lime green twigs turn shiny gray brown with many light-colored raised dots (pores). Two buds, one directly above the other, appear at each joint. Feathery, fernlike deciduous leaves are alternate, and twice compound (twice divided) with 10-24 primary leaflets, each subdivided into 40-60 smaller leaflets. Small leaflets are asymmetric with the center vein closer to one margin and running parallel to it. Margins are smooth. Mimosa can form colonies and dense stands, spreading along streams. [Mimosa seedlings resemble the native partridge pea, *Chamaecrista fasciculata*, a herbaceous annual with compound (once divided) leaves.]

Flowering Dogwood (*Cornus florida*) — small understory tree, horizontal branching, showy white bracts around flower clusters in April, shiny red fruit, fall color

Redbud (*Cercis canadensis*) — small understory tree, rosy pink to purple flowers in April, beanpod fruit, fall color, prefers more basic soils



Downy & Smooth Serviceberry

Downy and Smooth Serviceberry (*Amelanchier arborea*, *A. laevis*) — small trees, showy white flowers in April, edible reddish to dark purple fruit, fall color



Princess-tree, Empress-tree

Princess-tree, Empress-tree (*Paulownia tomentosa*) — Princess-tree is known to be an early colonizer of sterile soils, as may occur after a high temperature wildfire. Large deciduous leaves are opposite, broadly ovate and heart shaped. Leaf edges are entire or shallowly lobed, and may be toothed on small plants. Both surfaces are fuzzy hairy and dull, light-green above, and pale-green beneath. On saplings, the leaves may be in whorls of three and are typically much bigger than leaves on more mature trees. A known invader after fire, princess-tree has upright clusters of large purple flowers and is a prolific seed producer even on young plants. Winged seeds are wind and water dispersed.

Yellow Buckeye (*Aesculus flava*) — large canopy tree, upright clusters of yellow flowers in spring, compound leaves are palmate, large nuts in husks, fall color

Redbud (*Cercis canadensis*) — [see description under **Mimosa**]



Yellow Buckeye